



**INSTITUTE OF PUBLIC HEALTH
COLLEGE OF MEDICINE AND HEALTH SCIENCES
UNIVERSITY OF GONDAR**

**FOOD SAFETY KNOWLEDGE, PRACTICE AND ASSOCIATED FACTORS AMONG
STREET FOOD VENDORS IN KOMBOLCHA TOWN, NORTH EAST ETHIOPIA**

BY

GENET MESELE

Advisors: Mrs. Azeb Atenafu (BSc, MSc)

Dr. Sintayehu Mulugeta (DVM, MSc)

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Approved by the Examining Board

Head, Institute of public Health

Advisors:

Mrs. Azeb Atenafu (BSc, MSc) _____

Dr. Sintayehu Mulugeta (DVM, MSc) _____

Examiner

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ACRONYMS

CDC	Center for Disease Control and Prevention
EHI	Environmental Health Inspector
FAO	Food and Agriculture Organization
INFOSAN	International Food Safety Authorities Network
KAP	Knowledge, Attitudes and Practice
NGO	Non-Governmental Organization
WHO	World Health Organization
PI	Principal Investigation

ABSTRACT

Introduction: Food safety is a greatest concern with street foods as these foods are generally prepared and sold under unhygienic conditions, with limited access to safe water, sanitary services, or garbage disposal facilities. Understanding of food vender's knowledge and practice is vital in the preparation of various food safety related training programs. However, in Combolcha town knowledge and practices of street food vendors on food safety is not well known and the determinant factors still need to be addressed.

Objectives: To assess food safety knowledge, practice and associated factors among street food vendors.

Methods: Cross-sectional survey was performed from March to May 2014 in Combolcha town. A total of 309 street food vendors were selected by simple random sampling technique. Standardized pre-tested questionnaire and observation checklist were used for data collection after a proper consent and ethical clearance. Factors associated with knowledge and practice of street food vendors regarding food safety were identified using bivariate and multivariate logistic regression.

Result: About 87% of the vendors were females. The mean age of the respondents was 33.85(S.D \pm 8.45) years with the range of 18 to 57. Around 61% of the vendors had good food safety knowledge while only about 25% of the respondents had safe food handling practices. Vendors who had higher educational status were 4(AOR=4.399, CI=1.940-9.975) times more knowledgeable as compared to vendors who had no formal education. Respondents who had no food safety related information and training were 83% (AOR=0.174, CI= 0.082-0.336) less likely have Knowledge as compared to vendors who had information and training. Vendors who had been regulated by environmental health inspectors were 2.41(AOR= 2.541, CI=1.077-5.993) times more practicing safe food handling as compared to participants who had no inspection by regulatory bodies. Vendors who had no license were 75% (AOR= 0.253, CI=0.103-0.535) less likely to practice safe food handling as compared to participants who had license.

Conclusion: The multivariate logistic regression model indicated that, educational status, license, regulation by environmental health inspectors and food safety related information and training, were identified as the independent predictors for the presence of poor food safety knowledge and handling practice by the vendors.

Key words: *Food safety, knowledge, practice, street food, street food vendors*

1. INTRODUCTION

1.1 . Statement of the problem

In most countries of the world vending of street food in urban areas and the trend of eating outside one's own home are on the increase for many reasons; rapid urbanization, increased industrialization, changing lifestyles, the break-up of the extended family system, increase in the number of working women, economic prosperity and increased tourism potential (1, 2). The street foods provide a source of affordable nutrients to the majority of the people especially the low-income group (3) and making a sizeable contribution to the economies of developing countries (4). However, after the twenty-first century food poisoning, food borne diseases and food safety becomes a greatest concern (1,5) especially with street foods as these foods are generally prepared and sold under unhygienic conditions, with limited access to safe water, sanitary services, or garbage disposal facilities (1,6). This is outstanding widespread food borne diseases, due to the mushrooming of wayside food vendors who lack an adequate understanding of the basic food safety issues and lack of basic infrastructures (4, 7).

The problem of street food safety is not only a problem in developing countries but also in developed countries, which have advanced food chain monitoring systems (8). Due to their diversity, mobility and temporary nature (9, 6) most of the vendors who sold both raw and cooked food items were not regulated; they operated haphazardly without any monitoring of what they prepared and how they prepared it (10, 11).

A general lack of factual knowledge about the epidemiological significance of many street vended foods, poor knowledge of street vendors in basic food safety measures and inadequate public awareness of hazards posed by certain foods has severely hindered the deployment of a precise scientific approach to those very serious problems (4), as a result, the conditions of street food preparation and vending raise many concerns for consumer's health (12).

An estimated 2.5 billion people patronize food-vendors world-wide (13).The food production can be very complex with various stages which may allow routes of exposure, meaning that pathogen control is critical in the “farm to fork” food production continuum (14). As a result each day millions of people become ill and thousands die from a preventable food borne disease (2).While the vast majority of cases are mild, a significant number of cases are fatal and a high incidence of acute infections and chronic sequelae can lead to billions of dollars in medical costs, loss of productivity (15) and frequent recalls (16).

In Ethiopia alone about 600 children and a number of immune-compromised people are dying from diarrhoeal diseases every day which is food and water related. Children and immune compromised people are usually the first to fall victim and die from diseases such as cholera, dysentery and other food poisoning related serious infections (17). A substantial knowledge and skill of food handlers is of paramount importance to prevent and control food borne diseases. In addition, identification of determinant factors of good food handling practice is important to establish and implement programs that can help improve vendors’ knowledge and safe food handling practice. However, studies which could show status of knowledge, practices and associated risk factors regarding food safety and hygiene on street food vendors are not available across the country. This potentially obscures the health aspect importance of street food to the health of the people, loss to the decrease productivity and expenditures to cure diseases associated with this food.

1.2. Literature review

The street food is prepared on the streets and ready-to-eat, or prepared at home and consumed on the streets without further preparation (18, 19). With regard to mode of selling, vendors can be broadly classified into stationary and ambulatory/mobile (20). It has been found that stationary vendors, who sold their products from small stalls, kiosks, and so forth, are the predominant type (21, 22). Ambulatory vendors refer to those that push carts around selling their products and hold their products by their selves (e.g. carry on their head). Most vendors operate from selected strategic locations, including bus and train stations, markets and shopping areas, commercial districts, outside schools and hospitals, residential suburbs, factories, and construction sites. In some places, it appears that vendors have a regular clientele (23, 24, 25).

Among the various food service sectors, street foods occupy a unique position and in recent years have become an important component of the food distribution system in most of the developing countries, where they have become an indispensable part of daily life, especially in the urban areas where they cater mostly to the middle class and poorer segments of the society (2, 3, 6, 15, 22, 26).

Food safety is become a greater concern with street foods, because by their nature, street food contamination is obvious (22). Major sources contributing to street food contamination are the place of preparation, utensils for cooking and serving, raw materials, time and temperature abuse of cooked foods, cross contamination between ready to eat and raw food items, the presence of poor environmental sanitation and poor personal hygiene (2, 4, 22, 26, 27, 28).

Every year in the United States an estimated of 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths are the consequence of food borne illnesses (29). In developing countries, where a significant proportion of the annual budget of both governments and development partners is spent confronting food-borne diseases (30).

1.2.1 Food safety knowledge and practice

Poor knowledge of hygiene and practices in food service establishments, improper food handling practice, lack of basic infrastructure, poor personal hygiene and poor environmental sanitation are the main risk factors associated with street food safety (7, 26).

Food handlers are expected to have a substantial knowledge and skills for handling foods hygienically (31). However, most vendors are often poorly educated and untrained in food safety and have not sufficient basic food safety knowledge (32). Even handlers who have knowledge about food safety they did not practice them and this has also been reported in different studies where food handlers did not usually translate their knowledge into practice (7, 11, 32). Studies have documented discrepancies between knowledge and practices among food handlers (33, 34).

Studies in Bahirdar, Ethiopia and other countries revealed that most of food handlers have good knowledge of food hygiene. However, they had poor knowledge in safe practice where they handled raw materials for food without washing their hands; wore hand jewelleryes and fondled their bodies while preparing food (7, 27, 35,36).

1.2.2 Factors associated with food safety knowledge and practice

1.2.2.1 *Socio-demographic factors*

Toh and Birchenough (37) have shown that there were strong correlation between knowledge and food handling practices. Different earlier studies showed that food safety knowledge tends to increase with age and practice (7, 23, 31). Observation on food safety knowledge and practices showed, female have higher practices on food preparation compared to male, but in term of knowledge, male and female are on the same level (7, 38). Another study has also shown that level of food safety knowledge is associated with the academic status of food vendors (37).

1.2.2.2 License status and regulation by environmental health inspectors

Street food vendors who had license were regulated by environmental health inspectors and received food safety related training. A study conducted in Johannesburg showed that, acceptance with regulatory body, having license and receiving training were significantly associated with the knowledge and handling practice of street food vendors regarding food hygiene and safety (22).

1.2.2.3 Food safety related training and information

In Johannesburg and Nigeria studies conducted by Campbell 2011 and Chukuezi 2010 revealed that street food vendors who received formal food safety related training had better Knowledge and hygienic handling practice regarding food hygiene and safety (33,40). Most of street food vendors had no information regarding food safety and hygienic handling practices. This food safety related information scarcity affect street food vendor's food knowledge and proper food handling practice. A study conducted in Sudan by Elneim, showed that most of street food vendors had information scarcity regarding food safety (27).

1.2.2.4 Basic infrastructure

The majority of street food vending sites furthermore lacks basic infrastructure and services such as potable running water and waste disposal facilities. Because of unavailability of running water at vending site, hands and utensils washing are usually done repeatedly in one or more buckets, and sometimes without soap (28, 41, 42).

1.2.2.5 Personal hygiene

According to Bas and co-workers (43), the staff employed in food and beverages services should have a clean, tidy and proper appearance, without any skin infections, good dental hygiene, have short finger nails and are not in the habit of biting nails, do not wear jewellery except wedding ring, wearing no make-up, work in clean shoes and uniform, and stick to good hygiene practices. However many of the studied respondents fulfilled some of these characteristics and had poor personal hygiene (7, 27, 32, 35, 36).

1.2.2.6 Environmental sanitation

Most of the street foods are prepared in unhygienic and in poor sanitary conditions. This is because the liquid and solid waste disposal systems are not proper and vendors deposited their food and water wastes beside the stalls; these providing nutrients for insects and rodents, which may carry food borne pathogens (10,28).

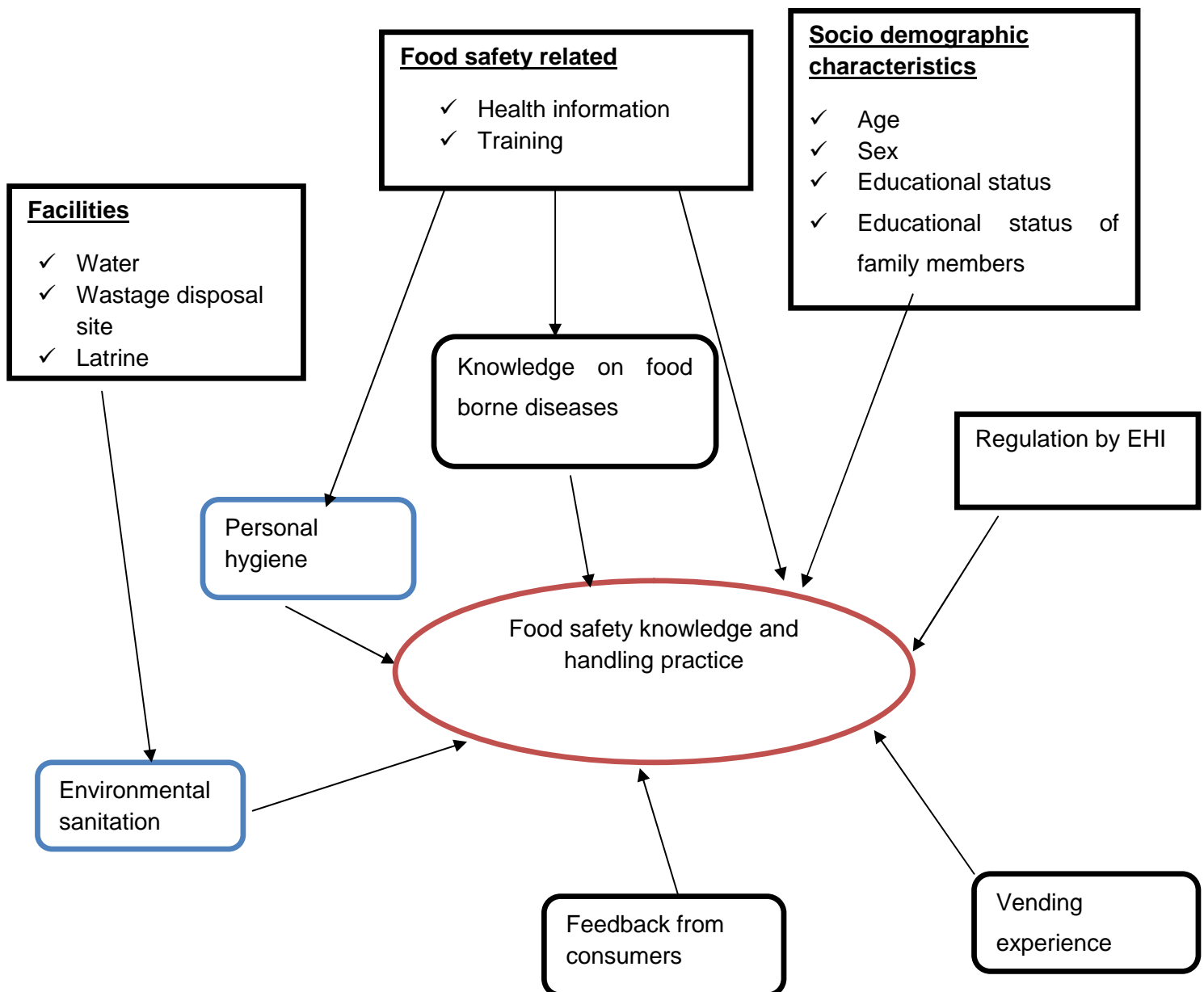


Figure 1. Conceptual framework on food safety knowledge, practice and associated factor with its application in street food vendors at Combolcha town, 2014.

Source: developed by PI.

1.3. Justification of the study

Food borne diseases are wide spreading and growing public health problem, both in developed and developing countries. In Ethiopia, food borne illnesses are prevalent and the toll in terms of human life and suffering is enormous.

Poor personal hygiene frequently contributes to food borne illness, which indicates that food handlers' knowledge and handling practices have a great role in the production of healthy food for consumers. Understanding of food vender's knowledge and practice is vital in the preparation of various food safety related training and educational programs, in enforcement of licensing and for establishment of inspection by regulatory bodies. However, in Combolcha city there are no researches conducted to determine the knowledge and practices of street food vendors on food hygiene and safety. Even nationally there is information scarcity. Due to this, knowledge and practices of street food vendors on food hygiene and safety as well as the determinant factors still need to be addressed.

Therefore this study is important in the preparation of different awareness creation programs for these groups by the concerned bodies and in the adoption of controlling and preventing strategies of food borne diseases. Furthermore it may also act as additional base line data for future studies.

2. OBJECTIVES

2.1. General objective

- ✓ To assess food safety knowledge, practices and associated factors of street food vendors in Combolcha town, North East Ethiopia.

2.2. Specific objectives

- ✓ To describe the knowledge of street food vendors with regard to food hygiene and safety.
- ✓ To identify the practice of street food vendor with regard to food hygiene and safety.
- ✓ To identify factors associated with food safety knowledge in street food vendors.
- ✓ To identify factors associated with safe food handling practice in street food vendors.

3. METHODS

3.1. Study design

Community based cross sectional study design was conducted to assess food safety knowledge, practices and associated factors among street food vendors.

3.2. Study area and period

The study was conducted in Combolcha town from March to May 2014. The town is located in northern Ethiopia, in Amhara National Regional State, South Wello Zone, which is at a distance of 377 Km from Addis Ababa, and 505 Km from Bahirdar, the regional capital. Its astronomical location is 11° 06' North latitude and 39° 45' East longitude with an elevation between 1842 and 1915 meters above sea level. Administratively Combolcha town is divided into 11 kebeles, 5 urban and 6 rural, and an estimated population size of 104,695(44). In Combolcha city different factories and industries are available, as a result rural to urban migration is on the increase and the number of people eating outside their homes is expected to increase which in turn demands for more street food establishments.

3.3. Source and Study population

All street food vendors found in Combolcha town are source population and those vendors who sold ready to eat food were study population. A total of 309 street food vendors who sold cooked ready to eat food items in Combolcha town were included in this study.

3.4. Inclusion and exclusion criteria

3.4.1. Inclusion criteria

Street food vendors found in Combolcha town.

3.4.2. Exclusion criteria

Those street food vendors who sold only very dry foods (e.g. kolo)

3.5. Sample size determination and Sampling technique

Lottery method simple random sampling technique was applied to collect data. The sample size was calculated using single population formula ($n = (z / 2)^2 * p(1-p) / d^2$) with the assumptions of 95% CI, 5% marginal error, 50% of this population knows and have safe food handling practices and 10% non-response rate. The targeted sample size for this study was 384 which were rounded to 420 in order to be representative and large enough to be able to draw valid conclusions, to give an adequate reflection of the study population and to cater for non-responses.

However, the source of population being <10000, the sample size was adjusted by using the formula $Nxn/N+n$. There are about 400 street food vendors found in the study area. The computed sample size after adjustment was therefore 205. But in order to increase accuracy and precision, the sample size was increased to 309.

3.6. Data collection methods and instruments

Data were collected from all selected street food vendors found in the study area using face to face interview and observation by standardized interviewer administrated questionnaire and an observational check list. The questionnaire have four sections 1) general information such as socio-demographic information; 2) licensing and regulation related information, 3) training and food safety related information; 4) knowledge and practice towards food hygiene and safety. Data on availability of equipment and facilities for hygienic practice were collected from all selected street food vendors using an observation checklist. Critical elements to food safety and hygiene were listed on the observation checklist.

Four sanitarians and two public health professionals were recruited for data collection and supervision. Training for data collectors and supervisors were given by the principal investigator. The questionnaires were pre-tested to identify potential problem areas, unanticipated interpretations and cultural objections to any of the questions in 5% of respondents having similar characteristics with the study subjects in Harbu wereda. Based on the pre-test results, the questionnaires were additionally adjusted contextually and terminologically.

3.7. Variables of the study

3.7.1. Dependent variable

- Knowledge
- Practice

3.7.2. Independent variables

- Age
- Sex
- Educational status
- Inspection by regulatory organs
- Training
- Information on food hygiene and safety
- Vending experience
- Educational status of family members
- Feedback from the customers

3.8. Operational definition

- A. **Street food vendors:** Those who sold their products (meals, drinks, and snacks) from small stalls, kiosks, and those who hold their products with different materials or push carts around to sell their products.
- B. **Street food :** Those foods which are ready-to-eat, prepared and sold by vendors in streets and other similar public places
- C. **Food hygiene:** All conditions and measures necessary for ensuring the safety and wholesomeness for consumption of food at all its stages from its production, processing, storage, distribution, preservation and service.
- D. **Food safety:** All measures taken to protect food from any hazard or contamination.
- E. **Very dry foods:** Those foods are less perishable and comparatively less hazardous to consumer's health.

3.8.1. Measurements of the dependent variables

Knowledge

Mean used to determine knowledge level. A score of 1 was given for each correct yes/no response while 0 score to wrong response and classified into 2 levels as follow:

Less than 61.2%..... Poor level of knowledge

61.2% -100% Good level of knowledge

Practice

Mean used to determine practice level. A score of 1 was given for each yes response and availability of food safety related facilities and 0 for each no response and unavailability of food safety related facilities. Level of practice was classified into 2 levels as follow:

Less than 25.6%..... Poor level

25.6% - 100% Good level

3.9. Data quality assurance

To ensure quality of data standardized questionnaires were developed from related published studies with little modification; training was given to data collectors and supervisors; the questionnaire was pretested and necessary correction done after the pre-test. The completed questionnaires were handled by the supervisors on each day of data collection. After checking for consistency and completeness, the supervisors submitted the filled questionnaires to the principal investigator. Incorrectly filled or missed ones were sent back to data collectors for correction. Anything which was unclear and ambiguous was corrected on the next day of collection. The collected data were double entered in Epi Info Database and Statistical Software version 3.5.4 to verify accuracy.

Throughout the course of the data collection, interviewers were supervised at each site, regular meetings were held among the data collectors and the principal investigator in which problematic issues arising from interviews were conducted and mistakes found during editing discussed and decision was reached. Different technical interviewing methods utilized by the data collectors to initiate vendors' participation in the study in order to decrease social desirability bias.

3.10. Data management, processing and analysis

Data were categorized, coded and entered in to computer using Epi Info version 3.5.4 and transferred in to SPSS version 16.0 for the analysis. Any logical and consistency error identified during data entry were corrected after revision of the original completed questionnaire. To explain the study participants in relation to relevant variables descriptive statistics (i.e. frequencies, mean, standard deviation, and percentage) were used. Bivariate and multivariate logistic regressions were used to assess the association between outcome and explanatory variables. All variables which had 0.2 or below p-value in binary logistic regression were inserted in to the multiple logistic regression models. Multivariate logistic regression models were constructed using a enter selection approach. Variables with p-value < 0.05 were considered significant. The fit of each model was assessed using the Hosmer-Lemeshow goodness-of-fit test. The association and its strength were presented using odds ratios and 95% confidence interval and finally the variables which had significant association were identified on the basis of odd ratio, with CI and p-value less than 0.05. The results of the analysis were presented using tables, graphs and narration.

4. ETHICAL CONSIDERATION

This study was carried out after getting approval from the Ethical Review Committee of University of Gondar and the copy of approval letter given for Combolcha City Administration Health Office. Then data were collected after getting written consent from the health Office. Informed verbal consent also obtained from each study participants. All participants were informed about the purpose of the study, the importance of their participation, maintenances of privacy and confidentiality prior to data collection. Participants' involvement in the study was on voluntary basis; participants who were unwilling to participate in the study and those who wish to quit their participation at any stage were informed to do so without any restriction. Privacy and confidentiality of information given by each study participants were maintained by omitting their names in the questionnaire.

5. RESULTS

5.1. Types of vendors

Among the total 309 vendors, 247(80%) were stationary and 62(20%) were ambulatory.

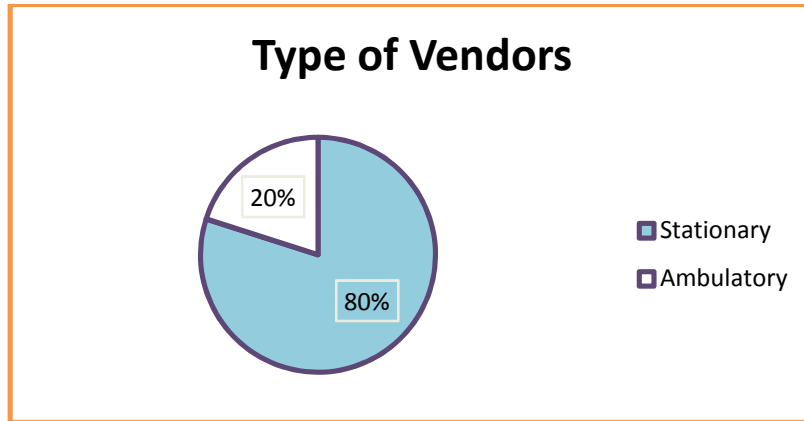


Figure 2. The type of street vendors in Combolcha town

5.2. Licensing, Environmental health inspection, training and Food safety information

As it is described in figure 3, 156(50.5%) street food vendors were licensed whereas 153 (49.5%) were not licensed. Regarding to environmental health inspection 164(52.4%) street food vendors were inspected by the governmental regulatory body while 145(47.6%) were not inspected.

Regarding to information on food safety and hygiene 162(52.4%) respondents had information about safe and hygienic food handling practices through different mass medias, health inspectors and training, whereas the rest 147(47.6%) did not get information. Majority of street food vendors, 190 (62.5%), did not receive food safety related training, while only(37.5%) got formal training from the authority concerned (Figure 3.).

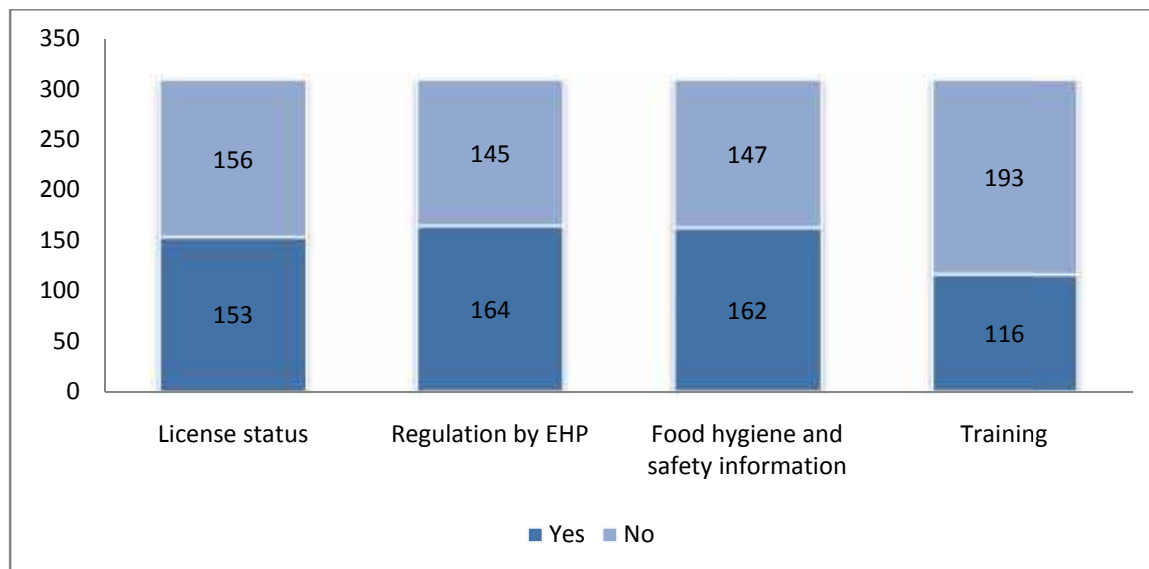


Figure 3. Frequency of the status of street food vendors regarding license, regulation, food safety information and training

5.3. Scio-demographic characteristics of street food vendors at Combolcha town

Socio-demographic data of the food vendors is presented in table 1. It included sex, age, marital status, religion, and educational status. The majority of the respondents (87.7%) were females. The mean age of the respondents was 33.85(S.D \pm 8.45) years with the range of 18 to 57 years. Majority of the respondent were married 250 (68.0%) while 65(21%) of them were single. The remaining 24(7.8) and 10(3.2%) were divorced and widowed, respectively. For educational level, it was found that there were 39.2% had no formal education while the remaining 188 (60.8 %) of the participants, at least attend primary education. Of the total respondents 174(56.3%) had more than four years of working experience. More than half respondents, 185(59.9%) were Ethiopian orthodox Christian religion followers and followed by Muslim 116(37.5%). Out of the total participants 141(45.6) respondent were living with a person who had no formal education and the remaining 168(54.4%) of them were living with a person who had at least primary education (Table 1).

Table 1: Socio-demographic characteristics of street food vendors in Combolcha town, North East Ethiopia, 2014

Characteristics		Frequency	Percentage
Sex	Male	38	12.3
	Female	271	87.7
Age	< 20	17	5.5
	20-30	98	31.7
	31-40	129	41.7
	41-50	57	18.4
	>50	8	2.6
Marital status	Married	210	68.0
	Single	65	21.0
	Divorce	24	7.8
	Widowed	10	3.2
Educational status	No formal education	121	39.2
	Primary	78	25.2
	Secondary	83	26.9
	Higher education	27	8.7
Religion	Orthodox	185	59.9
	Muslim	116	37.5
	Catholic	4	1.3
	Protestant	4	1.3
Ownership	Yes	294	95.0
	No	14	4.5
Educational status of a person they live	No formal education	141	45.6
	Primary	80	25.9
	Secondary	67	21.7
	Higher education	21	6.8
Working experience	One year	25	8.1
	Two years	35	11.3
	Three years	75	24.3
	Four years or more	174	56.3

5.4. Level of food safety knowledge among street food vendors

To determine the level of food safety knowledge, scoring for each question was made and the total score obtained was between 0-25. Of the total 309 respondents 189(61.2%) had good knowledge and the remaining 120(38.8%) had poor knowledge with a mean value of 61.2 (S.D. \pm 0.45), regarding food safety and hygienic handling practice. Table 2 shows the frequency and percentage of responses for food safety knowledge assessment.

Table 2. Frequency and percentage food safety knowledge assessment of responses among street food vendors in Combolcha town, 2014

Variable	Frequency	Percentage (%)
Wiping Cloths can spread microorganisms		
Correct	222	71.8
Incorrect	87	28.2
Refrigeration eliminates harmful germs in food.		
Correct	213	68.9
Incorrect	96	31.1
The same cutting board can be used for raw foods and cooked foods provided it looks clean		
Correct	118	38.2
Incorrect	191	61.8
Raw foods need to be stored separately from cooked foods		
Correct	250	80.9
Incorrect	59	19.1
Cooked foods do not need to be thoroughly reheated		
Correct	189	61.2
Incorrect	120	38.8
Habit of fingering nose is dangerous		
Correct	249	80.6
Incorrect	60	19.4
Skin infections can contaminate food		
Correct	240	77.7
Incorrect	69	22.3
Lick fingers can contaminate food		
Correct	211	68.3
Incorrect	98	31.7
Utensils should be washed with hot water		
Correct	229	74.1
Incorrect	80	25.9
Mouth, nose and hair should be covered		
Correct	257	83.2
Incorrect	52	16.8
Food borne diseases causing microorganisms are found every where		

	Correct	170	55.0
	Incorrect	139	45.0
Microorganisms are present on human skin			
	Correct	165	53.4
	Incorrect	144	46.6
Human beings emit microorganisms during sneezing and talking			
	Correct	207	67.0
	Incorrect	102	33.0
Food may be contaminated during touching by our hands			
	Correct	224	72.5
	Incorrect	85	27.5
Microorganisms cannot survive in cold and cooked foods			
	Correct	71	23.0
	Incorrect	238	77.0
Washing fruits and vegetables before eating/preparing is not important			
	Correct	226	73.1
	Incorrect	83	26.9
Status of the source of raw material affects the quality of the food			
	Correct		
	Incorrect	215	69.6
		94	30.4
How many times you Clean and sanitize cutting boards, meat slicers and utensils?			
	Correct	21	6.8
	Incorrect	288	93.2
Do you know about the 5 Keys to Safer Food?			
	Correct	22	92.9
	Incorrect	287	7.1
List the name of the 5 Keys?			
	Correct	21	6.8
	Incorrect	288	93.2
Leftover foods can cause diseases			
	Correct	21	6.8
	Incorrect	288	93.2
How do you store large amounts of food in refrigerator?			
	Correct	140	45.3
	Incorrect	169	54.7
How should dishes be washed to prevent food poisoning?			
	Correct	114	36.9
	Incorrect	195	63.1
Where is the best place to store raw meat in the refrigerator?			
	Correct	99	32.0
	Incorrect	210	68.0
How long can you store meat and chicken in the refrigerator to eat later?			
	Correct	124	40.1
	Incorrect	185	59.9

5.4.1. Factors associated with food safety knowledge on street food vendors

In this study there was no significant difference in the level of food safety knowledge between male and female respondents based on the p-value obtained which was greater than 0.05(i.e. $p = 0.45$).

Study participants who had higher educational credential were 4(AOR= 4.039, CI=1.016-16.061), those who had secondary educational status were 4(AOR=4.399, CI=1.940-9.975) and those participants who attend primary education were 3.2 (AOR=3.188, CI=1.359-7.479) times more knowledgeable as compared to respondents who had no formal education. Respondents who had no food safety related information were 83% (AOR=0.174, CI= 0.082-0.336) less likely have knowledge as compared to participants who had food safety related information. Respondents those who didn't receive food safety related training were 83% (AOR=0.174, CI=0.082-0.366) less likely have knowledge about food safety and hygienic handling practice as compared to participants who took formal food safety related training (Table 3).

Table 3. Determinant factors associated with street food vendor knowledge in Combolcha town, 2014

Variables	knowledge		COR (95% CI)	AOR(95% CI)
	Poor n(%)	Good n (5%)		
Sex				
Male	9(23.7)	29(76.3)	2.235(0.204-0.982)	0.659(0.238-1.824)
Female	111(41)	160(59)	1	
Age (yrs.)				
<20	3(17.6)	82(82.4)	1	
21-30	47(48)	51(52)	0.233(0.063-0.860)	0.145(0.027-0.789)
31-40	46(35.7)	83(64.3)	0.387(0.106-1.416)	0.142(0.024-0.858)
41-50	21(36.8)	36(63.2)	0.367(0.094-1.429)	0.255(0.039-1.672)
>50	3(37.5)	5(62.5)	0.357(0.054-2.384)	0.369(0.028-4.926)
Marital status				
Married	83(39.5)	127(60.5)	1	
Single	18(27.7)	47(72.3)	1.706(0.928-3.140)	0.979(0.378-2.536)
Divorced	17(70.8)	7(29.2)	0.269(0.107-0.677)	0.188(0.054-0.655)
Widowed	2(20)	8(80)	2.614(.542-12.616)	1.338(0.218-8.220)
Educational status				
No formal education	72(59.5)	49(40.5)	1	
Primary education (1-8)	24(30.8)	54(69.2)	3.306(1.810-6.039)	3.188(1.359-7.479)*
Secondary(9 - 12)	20(24.1)	63(75.9)	4.629(2.489-8.607)	4.399(1.940-9.975)
Higher education (12+)	4(14.8)	23(85.2)	8.449(2.751-25.950)	4.039(1.016-16.061)
License status				
Licensed	32(20.9)	121(79.1)	1	
Not Licensed	88(56.4)	68(43.6)	0.2004(0.124-0.338)	0.533(0.244-1.165)
Regulation by EHI				
Yes	38(57.7)	126(76.8)	1	
No	38(23.2)	60(42.3)	0.221(0.135-0.361)	0.810(0.356-1.843)
Training received				
Yes	14(12.1)	102(87.9)	1	
No	104(54.7)	86(45.3)	0.113(0.61-0.213)	0.174(0.082-0.366)*
Food safety related information				
Yes	26(16)	136(84)	1	
No	93(64.1)	52(35.9)	0.107(0.062-0.183)	0.174(0.082-0.366)*

* Significant values

5.5. Level of safe food handling practice of street food vendors

To determine the level of safe food handling practice, scoring for each activity was made and the total score obtained was between 0-34. Of the total 309 respondents nearly three fourth of the respondents, 230(74.4%), had poor practice, while only 79(25.6%) had good practice with a mean value of 39.25 (S.D. \pm 1.493), regarding safe food handling practice (Table 4.).

Table 4.Frequency and percentage in the fulfilment of safe food handling practice among street food vendors in Combolcha town, 2014

Variables	Frequency	Percentage (%)
Tap or a water container to carry water		
Yes	281	90.9
No	28	9.1
A basin or sink or bucket for washing hands		
Yes	217	70.2
No	92	29.8
Soap for hand washing		
Yes	167	54
No	142	46
A bowl or bucket for washing dishes and utensils		
Yes	248	80.3
No	61	19.7
Soap powder or liquid to wash dishes		
Yes	158	51.1
No	151	48.9
Cleaned utensils and foods are stored 60 cm above the ground		
Yes		
No	74	23.9
	235	76.1
Garbage is stored in suitable receptacles.		
Yes	68	22
No	241	78
Soap powder or liquid to wash dishes		
Yes	158	51.1
No	151	48.9
Clean Cloths to cover all food		
Yes	118	38.2
No	119	61.8
Separate knife and cutting board for raw and cooked foods		
Yes	112	36.2
No	197	63.8
Separate store for raw and cooked foods		
Yes	159	51.5
No	150	48.5
Correct dish washing procedures (ask them to show you how they wash)		
Yes	36	11.7
No	273	88.3
Do not Wipe the washed utensils by clothe		

Yes	68	22
No	241	78
No cracked and scratched utensils		
Yes	80	25.9
No	229	74.1
Hair is covered during service		
Yes	193	62.2
No	116	37.5
Clean Cloths to cover all food		
Yes	118	38.2
No	191	61.8
Separate knife and cutting board for raw and cooked foods		
Yes	112	36.2
No	197	63.8
Separate store for raw and cooked foods		
Yes	159	51.5
No	150	48.5
Correct dish washing procedures (ask them to show you how they wash)		
Yes	36	11.7
No	273	88.3
Do not Wipe the washed utensils by clothe		
Yes	68	22.0
No	241	78.0
Cleaned utensils and foods are stored 60 cm above the ground		
Yes		
No	74	23.9
	235	76.1
Garbage is stored in suitable receptacles.		
Yes	68	22.0
No	241	78.0
No cracked and scratched utensils		
Yes	80	25.9
No	229	74.1
Hair is covered during service		
Yes	193	62.5
No	116	37.5
Used forceps or ladles to pick up ready-to-eat foods		
Yes	183	59.2
No	126	40.8
Short nails, clean hand		
Yes	184	59.5
No	125	40.5
No cuts or wound on the hand		
Yes	202	65.4
No	107	34.6
No decorated hand nails and jewelleries		
Yes	183	59.2
No	126	40.8
Washed hands after touching different things		
Yes	250	80.9
No	59	19.1
Clean surfaces		

Yes	53	17.2
No	256	82.8
Have habit of fingering nose and ear		
Yes	79	25.6
No	230	74.4
Lick fingers to pick paper/ money		
Yes	100	32.4
No	209	67.6
Wipe hands on a dirty cloth		
Yes	66	21.4
No	243	78.6
Touch the inside and rim of cups or glasses.		
Yes	73	23.6
No	236	76.4
Chewing gum at work		
Yes	107	34.6
No	202	65.4
Store food in refrigerator		
Yes	97	31.4
No	212	68.6
Wash hands after visiting of toilet		
Yes	157	50.8
No	152	49.2
Wash hands after touching the skin, nose		
Yes	77	24.9
No	232	75.1
Wash hands before and after preparation of foods		
Yes	199	64.4
No	110	35.6
Wash hands after receiving of money		
Yes	65	21
No	244	79
Wash hands before washing of dishes		
Yes	100	32.4
No	209	67.6

5.6. Factors associated with safe food handling practice of street food vendors

Overall, the majority of respondents had low level of practices on food safety with mean and SD 39.25, ± 1.493 , respectively that involved 230 (74.4%) of 309 respondents. Only 79(25.6%) of respondents had good practice on food safety. Respondents who had no license were 75% (AOR= 0.253, CI= 0.103-0.5350) less likely to practice safe food handling as compared to participants who had license. Those participants who were regularly inspected by environmental health inspectors were 2.41(AOR= 2.541, CI=1.077-5.993) times more practicing safe food handling as compared to participants who were not inspected by environmental health inspectors. Respondents who had no food safety and hygiene information were 92% (AOR=0.077, CI=0.030-0.193) less likely to practice safe food handling as compared to participants who had food safety related information (Table 5).

Table 5. Factors associated with safe food handling practice of street food vendors in Combolcha town, 2014

Variable	Practice		COR(95% CI)	AOR(95% CI)
	Poor (%)	No. Good No. (%)		
Sex				
Male	29(76.3)	9(23.7)	0.891(0.402-1.975)	2.423(0.900-6.524)
Female	201(74.2)	70(25.8)	1	
Age (yrs)				
<20	12(70.6)	5(29.4)	1	
21-30	71(73.5)	26(26.5)	0.833(0.267-2.601)	0.76(0.187-3.085)
31-40	89(69.0)	40(31.0)	1.079(0.356-3.266)	0.529(0.117-2.384)
41-50	49(86.0)	8(14.0)	0.392(0.109-1.414)	0.206(0.037-1.4)
>50	8(88.89)	1(11.11)	0.3(0.29-3.071)	0.166(0.01-2.66)
Marital status				
Married	160(76.2)	50(23.8)	1	
Single	47(72.3)	18(27.7)	1.226(0.653-2.299)	0.581(0.220-1.538)
Divorced	17(70.8)	7(29.2)	1.318(0.517-3.3359)	1.280(0.438-3.759)
Widowed	6(60.0)	4(40.0)	2.133(0.579-7.862)	1.554(0.309-7.817)
Educational status				
No formal education	96(79.3)	25(20.7)	1	
Primary education (1- 8)	61(78.2)	17(21.8)	1.070(0.534-2.144)	0.690(0.284-1.677)
Secondary(9 - 12)	59(71.1)	24(28.9)	1.562(0.818-2.984)	1.103(0.496-2.456)
higher education (12+)	14(51.9)	13(48.1)	3.566(1.488-8.544)	1.280(0.428-3.829)
License status				
Yes	93(60.8)	60(39.2)	1	
No	137(87.8)	19(12.2)	0.215(0.120-0.384)	0.235(0.103-0.535)*
Regulation by EHI				
Yes	112(68.3)	52(31.7)	2.283(1.319-3.95)	2.541(1.077-5.993)*
No	118(83.1)	24(16.9)	1	
Food safety related information				
Yes	96(59.3)	66(40.7)	1	
No	133(91.7)	12(8.3)	0.131(0.067-0.256)	0.077(0.030-0.193)*

* Significant values

6. DISCUSSION

Food handling personnel play an important role in ensuring food safety throughout the chain of food production (i.e., farm to fork process) (1). The present study revealed the level of food safety knowledge and practice of street food vendors in Combolcha town. Majority of the respondents (61.2%) had good knowledge, while only 38.8% had poor knowledge regarding food safety and hygienic handling practices.

Most of the vendors, 87.7%, in this study were females while only 12.3% were males. This is in contrast with the findings of Muinde and Kuri (10) who reported that 60% of the vendors who sold ready to eat food items in Nairobi were males and 40% were females. But it is in line with similar studies conducted by Muyanga and his colleagues (45) in Uganda. In this study most of the respondents were in the range of 30-40 years old and 45.6% had no formal education. This finding is in contrast with the finding of Abdella and his colleagues (11) in Sudan, who reported that most of the vendors were less than 30 years old with 46% having primary school education.

In the present study age and sex were not significantly associated with the knowledge and practice of street food vendors regarding food safety. This is in line with a study conducted at Johannesburg (22). However, it is inconsistent with different studies conducted at Bahirdar, Ethiopia and Malaysia. In those studies food safety knowledge and practice were significantly associated with age and sex of the vendors (7, 32). This might be due to working experience related to street food vendors for extended period of time that increases the knowledge how to handle the food safely and implement their knowledge in to practice.

Overall, in the present study, 189(61.2%) of the respondents had good knowledge regarding food hygiene and safety. This is in line with a study conducted in Malaysia, which was 57.8% (32). However, most of the vendors responded positively for food safety related questions in reality they did not practice them and this has also been reported in other studies where vendors did not translate their knowledge in to practice (7, 24). Other studies have also documented that there was discrepancies between

knowledge and practice among street food vendors (33, 34). This might be due to lack of basic infrastructures in the preparation of healthy food for consumers and presence of poor awareness regarding food contamination.

In this study, from the overall respondents, only about 25% of the participants had good food handling practice. This is much lower finding compared with a study conducted in Malaysia (32). This might be due to differences in level of economic and educational status, training provided, license and regulation carried out by environmental health inspection between the two countries.

The multivariate analysis revealed that educational status, training and food hygiene and safety information were significantly associated with knowledge of street food vendors regarding food hygiene and safety at 5% confidence level. In addition, the analysis also revealed that license, regulation by EHI, training and food safety related information were factors associated with safe food handling practice.

Almost half of the participants were licensed and it had statistically significant association with hygienic food handling practice. This study is inconsistent with the study conducted in Bahirdar (7). This might be due to the responsibility taken by the vendor that had the license and the regulatory action undertaken by the concerned bodies. More than 46% of the participants had no information regarding food safety and hygienic practice in this study area; this indicates that there is information scarcity. Similar finding is reported from a study conducted in Sudan (24).

In this study, 50.8% of the participants had practice of washing their hands after visiting the toilet. This is lower than a study conducted in Johannesburg and Sudan, which were 83% and 92%, respectively (22, 25). These differences might be attributed to differences in awareness about hygiene and educational status of the food vendors.

In the present study 81.6% of the respondents knew that cooked foods should be stored separately from raw foods, but only 51.5% of the respondents practiced it. The studies conducted in Johannesburg and Sudan documented that the knowledge of the street

food vendors with respect to this was much higher than the present study, 89% and 92%, respectively. However, 27% of the street food vendors kept separately cooked and raw foods in Sudan (46), which is lower than the current study, while 71% of vendors practiced it in Johannesburg (22), which is higher than the present study. These higher levels of difference in the knowledge and practice of street food vendors regarding keeping of cooked and raw food items separately might be due to the level of obtaining food safety related training, length of time or experience in this work and the study conducted with the time of training given. For example in Sudan the study was conducted after the participants took training whereas in this study majority of the participants received food safety related training before two years.

In the present study 51.1% of the vendors used separate utensils to store raw materials and cooked foods, 62% covered their hair and 22% of the respondents used cloth to wipe utensils after washing. This is in contrast with a study conducted at Gauteng. In Gauteng 34.5% of the participants cover their hair and 98% of the respondents wipe the utensils with clean cloths after washing (24). This higher level of difference might be due to level of knowledge regarding safe food handling practice, cultural, religious and age difference and also economic status of the participants and availability of basic facilities.

In this study only 37.5% of the participants received formal training regarding food hygiene and safety, while majority of the respondents (62.5%) didn't. This is lower than a study conducted in Johannesburg (22), where 67% of the participants had taken formal training. Whereas, the level of training provided for street food vendors in this study is higher than the report from two studies conducted in Nigeria which were 5% and 12%(40, 34). This difference might be due to the strength of food safety related regulations applied at the country and also license status of the participants. In this study there is significant difference between trained and untrained participants regarding their food safety knowledge. This finding agree with the studies conducted in Bahirdar, Johannesburg and Nigeria (7, 22, 40)

According to WHO (1), there are 5 keys that must be addressed by every food vendors. Even if knowledge of these 5 key principles was considered as vital to safer food

production, majority of street food vendors (93.2%) in the current study were not able to name the 5 keys and only about 7% list the name of these key principles. Similar finding was reported from Johannesburg (22).

In the current study more than 82% of the vendor's food selling environment was dirty. This is higher than a study conducted in Nigeria; which was 38.1% (40). This difference might be due to lack of garbage receptacle, the presence of poor knowledge by vendors about proper wastes disposal, poor awareness regarding interaction of food, environmental and human health, and poor regulation by environmental health inspectors between the countries and the study site.

7. LIMITATIONS OF THE STUDY

The limitations of this work were excluding identification and enumeration of bacteriological and other enteric pathogens and qualitative studies due to time and budget constraints.

8. CONCLUSION

Majority of the street food vendors had good knowledge of food hygiene and safety; however most of them had poor food handling practice. In the present study three fourth of the vendors experienced poor food handling practice. Factors such as, food safety related information was significantly associated with the knowledge and practice of street food vendors. Educational status and training were identified as the independent predictors for the presence of poor food safety related knowledge. And also license and regulation by environmental health inspectors were significantly associated with the vendor's food handling practice.

9. RECOMMENDATIONS

To Zonal Health Department, Combolcha town Municipal, Small Scale Enterprise Office, Health Department

- Should prepared different food safety relate training programs to street food vendors.
- Should enforce the vendors to have license.
- Food safety related education and awareness creation programs should be prepared.

To the street food vendor community

- Should be eager in the participation of food safety related awareness creation programs, those prepared by the governmental or NGOs and other concerned bodies.
- Be responsible to the health of the public consumers
- Develop sprit of competition among themselves to attract more customers by providing safe foods
- Work on save critical point, like washing hands after visiting the toilet, shortening their nails etc.

To researchers

- Laboratory supported study is encouraged for further confirmation using microbiological tests.
- Qualitative in combination with quantitative based study is encouraged to acquire detail information regarding food safety and hygienic handling practice of the vendors.

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11. ANNEXES

11.1. Annex I: Information Sheet and Consent Form

Information Sheet and Consent Form Prepared for street food vendors who are going to participate in the research project, assessment of knowledge and practices and associated factors of street food vendors on food hygiene and safety in Combolcha town, Northeast Ethiopia, 2014

Title of the Research Project:

Assessment of knowledge, practices and factors associated with it among street food vendors on food hygiene and safety in Combolcha town, Northwest Ethiopia, 2014.

Name of principal Investigator: Genet Mesele

Name of the Organization: University of Gondar College of Medicine and Health Sciences, institute of Public Health.

Name of the Sponsor: University of Gondar

Introduction:

This information sheet and consent form is prepared to explain the study you are being asked to join. Please listen carefully and ask any questions about the study before you agree to join. You may ask questions at any time after joining the study. This research team includes one principal investigator, five data collectors, and two supervisors.

Purpose of Research Project

The purpose of this research is to assess knowledge and practices and associated factors of street food vendors on food hygiene and safety in Combolcha town. The study will be helpful to determine knowledge, attitude and practices and to identify associated factors of street food vendors on food hygiene and safety in Combolcha town. It also contributes much to design appropriate intervention strategies. It also will serve as baseline information for subsequent studies in the country.

Procedure

To assess knowledge and practices and associated factors of street food vendors on food hygiene and safety, we invite you to take part in this project. If you are willing to participate in this project, you need to understand and sign the agreement form. Then after, you will be interviewed by the data collector to give your response. You do not need to tell your name to the data collector and all your responses and the results obtained will be kept confidentially by using coding system whereby no one will have access to your response.

Risk/ Discomfort

By participating in this research project, you may feel that it has some discomfort especially on wasting your time about 25 - 35 minutes. We hope you will participate in the study for the sake of the benefit of the research result. There is no risk in participating in this research project.

Benefits

If you participate in this research project, there may not be direct benefit to you but your participation is likely to help us in assessing knowledge, and practices and associated factors of street food vendors on food hygiene and safety. Ultimately, this will help us to work on intervention strategies.

Incentives/Payments for Participating

You will not be provided any incentives or payment to take part in this project.

Confidentiality

The information collected from you will be kept confidential and will be stored in a file without your name but a code number assigned to it. And it will not be revealed to anyone except the principal investigator and will be kept locked with key.

Right to refuse or withdraw

You have full right to refuse from participating in this research. You can choose not to respond to some or all questions if you do not want to give your response. You have also the full right to withdraw from this study at any time you wish, without losing any of your right.

Person to contact: This research project will be reviewed and approved by the ethical clearance committee of university of Gondar research and publication office. If you want to know more information, you can contact the committee through the address below. If you have any question you can contact any of the following individuals and you may ask at any time you want.

1. Dr. Genet Mesele: Student, University of Gondar, College of Medicine and Health Science, institute of public health
Cell phone: +251923398316
E-mail: g.mesele@yahoo.com
2. Mrs. Azeb Atenafu: University of Gondar, College of Medicine and Health Science, institute of public health,
Cell phone: +251918774536
E-mail: bemnyaz@gmail.com
3. Dr. Sintayehu Mulugeta;
Cell phone: +251911868748
E-mail: sintumu@yahoo.com

11.2 Annex II: Amharic Versions of Information Sheet and Consent Form

የመረጃ መስጫና ስምምነት መጠየቂያ ቅጽ

በመንገድ ላይና በመንገድ አካባቢ፣ በጋሪ በመግፋት፣ በመሸከምና ጊዜአዊ በሰሩት መከለያ ውስጥ የተለያዩ ምግቦችንና መጠጦችን የሚሸጡ ነጋዴዎች ስለ ምግብ ንጽህናና ደህንነት ያላቸውን እውቀትና አመለካከት ንድሁም ምግብን በንጽህና ለማዘጋጀት፣ ለመያዝና ለማቅረብ፣ ምግብን ከተለያዩ ብክለቶች ለመከላከል የሚተገብራቸውን ተግባራት ለማወቅ ሚደረግ ጥናት የመረጃ መስጫና ስምምነት መግለጫ የተዘጋጀ ቅጽ

ዋናተመራማሪ: ገነት መሰለ

የተቋሙስም: ጎንደር ዩኒቨርሲቲ፣ ህክምናና ጤና ሳይንስ ኮሌጅ፣የህብረተሰብ ጤና አጠባበቅ ኢንስቲቲዩት

ወጪውን የሚሸፍነው ተቋም: ጎንደር ዩኒቨርሲቲ

መግቢያ

ይህ የማብራሪያና የስምምነት ቅጽ አሁን እርስዎ እንዲሳተፉበት የሚንጠይቅዎትን የምርምር ጥናት የሚያብራራ ነው። እባክዎ በዚህ ጥናት ለመሳተፍ ከመወሰንዎ በፊት ይህንን ቅጽ መረጃ ሰብሳቢዎቹ በሚያነቡልዎት ጊዜ በጥንቃቄ በማድመጥ ጥያቄዎች ካለዎት ይጠይቁ። በዚህ ጥናት መሳተፍ ከጀመሩ በኋላም በማንኛውም ጊዜ ጥያቄዎች ካለዎት መጠየቅ ይችላሉ።

የጥናቱአላማ

የዚህ ጥናት አላማ በኮምፖዛይት ከተማ ውስጥ የሚገኙ በመንገድ ላይና በመንገድ አካባቢ፣ በጋሪ በመግፋት፣ በመሸከምና ጊዜአዊ በሰሩት መከለያ ውስጥ የተለያዩ ምግቦችንና መጠጦችን የሚሸጡ ነጋዴዎች ስለ ምግብ ንጽህናና ደህንነት ያላቸውን እውቀትና አመለካከት እንድሁም ምግብን በንጽህና ለማዘጋጀት፣ ለመያዝና ለማቅረብ፣ ምግብን ከተለያዩ ብክለቶች ለመከላከል የሚተገብራቸውን ተግባራት ለማወቅ ነው። እንድሁም የምግብ ንጽህናና ደህንነት ችግሮችን ለመቅረፍ በሚደረገው ሂደት ትልቅ አስተዋጽኦ ያደርጋል። በተጨማሪም በሀገሪቱ ለሚደረጉ ሌሎች ተከታታይ ጥናቶች እንደ መነሻ መረጃ በመሆን ይጠቅማል።

የአሰራርሂደት

በኮምፖዛይት ከተማ ውስጥ የሚገኙ በመንገድ ላይና በመንገድ አካባቢ፣ በጋሪ በመግፋት፣ በመሸከምና ጊዜአዊ በሰሩት መከለያ ውስጥ የተለያዩ ምግቦችንና መጠጦችን የሚሸጡ ነጋዴዎች ስለ ምግብ ንጽህናና ደህንነት ያላቸውን እውቀትና አመለካከት እንድሁም ምግብን በንጽህና ለማዘጋጀት፣ ለመያዝና ለማቅረብ፣ ምግብን ከተለያዩ ብክለቶች ለመከላከል የሚተገብራቸውን ተግባራት ለማወቅ በተዘጋጀ ፕሮጀክት ላይ እንዲሳተፉ ጋብዘንዎታል። በዚህ ጥናት ውስጥ ለመሳተፍ ከተስማሙ ስምምነቱን መረዳትና መስማማትዎን መግለጽ ይገባዎታል። ከዚህ በኋላ መረጃ ሰብሳቢዉ መጠይቁ ላይ ያሉትን ጥያቄች ይጠይቅዎታል ። ስምዎን መናገር አያስፈልግዎትም። የሚሰጡት መረጃ ምስጢራዊነቱ ይጠበቃል።

አደጋዎች ወይም የማይመቹ ነገሮች

በዚህ ጥናት በመሳተፍ የተወሰነ የማይመቹ ነገሮች ወይም ጥሩ ያልሆነ ስሜት ሊሰማዎት ይችላል። በተለይ የስራ ጊዜዎችን ከ25 -35 ደቂቃ ያህል ይሻማዎታል። ነገር ግን ጥናቱ ከሚሰጠው ጥቅም አኳያ እንደሚሳተፉ ተስፋ አደርጋለሁ።

ጠቀሜታ

በዚህ ጥናት ላይ በመሳተፍዎ ቀጥተኛ የሆነ ጥቅም ላያገኙ ይችላሉ፤ ነገር ግን የእርስዎ ተሳትፎ ነጋዴዎቹ ስለ ምግብ ንጽህናና ደህንነት ያላቸውን እውቀትና አመለካከት እንድሁም ምግብን በንጽህና ለማዘጋጀት፣ ለመያዝና ለማቅረብ፣ ምግብን ከተለያዩ ብክለቶች ለመከላከል የሚተገብራቸውን ተግባራት ለማወቅ ይረዳል። በተጨማሪም ችግሮችን ለመከላከል በሚደረጉ ስትራቴጂካዊ ርምጃዎች ላይ እንደ መነሻ ያግዘናል።

የተሳትፎክፍያዎች /ጥቅሞች/

በጥናቱ በመካፈልዎ የሚሰጡት ክፍያ የለም።

ሚስጥር ስለመጠበቅ

ለዚህ ጥናት የሚሰበሰብ መረጃ በሚስጥር ይጠበቃል። የሚሰበሰበው መጠይቅ የእርስዎን ስም ስለያ አይኖረውም። መረጃዉ በዋናዉ ተመራማሪ ፋይል ተደርጎ በቁልፍ የሚቀመጥ በመሆኑ ሌላ ሰው ሊያገኘዉ አይችልም።

በጥናቱ ያለመሳተፍ ወይም ራስን ከጥናቱ የማግለል መብት

በጥናቱ ላለመሳተፍ ከፈለጉ በዚህ ጥናት ያለመሳተፍ ሙሉ መብት አለዎት። ከመጠየቁ ውስጥ ጥቂት ጥያቄዎችን ወይም በሙሉ ያለመመለስዎ ይችላሉ።

የሚገናኙዎቸዉ ሰዎች

ስለዚህ ጥናት ጥያቄ ካለዎት የሚከተሉትን ሰዎች ማነጋገር ይችላሉ።

- | | |
|----------------|--------------------|
| 1. ዶ/ር ገነት መሰለ | ስ.ቁ: +251923398316 |
| 2. ሲ/ር አዜብ | ስ.ቁ: +251918774536 |
| 3. ዶ/ር ስንታየሁ | ስ. ቁ: +2519118687 |

11.3 Annex III: English version of Questionnaire

University of Gondar, College of medicine and health sciences, Institute of public health

Questionnaire designed to assess knowledge and practices and associated factors of street food vendors on food hygiene and safety in Combolcha town.

Verbal consent form before conducting interview

Greeting

Hello, I am_____. I am working in University of Gondar, institute of public health. I would like to ask you few questions about knowledge and practices and associated factors on food hygiene and safety. Your name will not be written in this form and will never be used in connection with any information you tell us. All information given by you will be kept strictly confidential. Your participation is voluntary and you are not obliged to answer any question you do not wish to answer. If you feel discomfort with the interview please feel free to drop it any time you want. But, your willingness to answer all of the questions would be appreciated. Your correct answer to the questions can make the study achieve the goals. Therefore, you are kindly requested to respond genuinely and voluntarily with patience. Do I have your permission to continue? 1. Yes
2. No

1. If yes, continue to the next page
2. If no, skip to the next participant by writing reasons for his/ her refusal

Name and Signature of the data collector _____

Date of interview _____ Time started _____ Time completed _____

Checked by Supervisor: Name _____ signature _____ Date _____

Result of interview: 1. Completed 2. Respondent not available
3. Refused 4. Partially completed

Instruction to Interviewers

1. The questionnaire must be completed at the business address. If a respondent refuses to co-operate, make a note for the researcher.
2. Interview the owner of the business. Conduct the interview at the business site. Please hand the respondent your letter of introduction or read it out if necessary. Confirm to the respondent (owner) that the information supplied will be treated strictly confidential. Obtain signed/verbal Consent.
3. Follow the instruction to the interviewers carefully to ensure that the questions are asked according to sequence. Indicate the response by means of a tick or circle in the blocks provided for closed ended questions or write down the exact response where applicable.
4. Do not try to influence respondents. Should the respondents give you wrong answers deliberately, make a note of this next to the relevant question.
5. Check the completed questionnaire thoroughly to ensure that no question has been skipped and all the questions have responses.
6. Complete the Observation Checklist.
7. Upon completion of the Questionnaire, thank the respondent for agreeing to participate and remind them that they will receive feedback.

No	Question	Possible Response	Skipping
I. Socio – demographic information			
1	Types of vendor	1. Stationary 2. Ambulatory	
2	Are you the Owner or Manager of the business?	1. Yes 2. No	
3	Did the owner or manager supervise you?	1. Yes 2. No	
4	How many employees including you does the business have?	1. One 2. Two 3. Three 4. Four or more	
5	Sex	1. Male 2.Female	
6	Age	_____ years	
7	Religion	1.Orthodox 4.Muslim 2. Catholic 5. Others specify 3. Protestant	
8	Marital status	1.Married 4.Widowed 2.Single 5.Separated 3.Divorced	
8	Educational status	1. No formal education 2. Primary education(1 - 8) 3. Secondary(9 - 12) 4. higher education (12+)	
9	With whom you live	1. Alone 2. Husband/ wife 3. Child/ children 4. Friends 5. Parents	
11	Educational status of person/s whom you live together	1. No formal education 2. Primary education(1 - 8) 3. Secondary(9 - 12) 4. higher education (12+)	
12	Family size		
13	Monthly income in birr(ETB)	_____	
14	How long have you been working?		
II. Regulations related issues			
1	License status	1. Licensed 2. Not Licensed	
2	Do you have a Certificate of Acceptability?	1. Yes 2. No	
3	. Do you know who the EHP/Inspector is?	1. Yes 2. No	

4	Do you think that the EHP/Inspector is helpful for your business?	1. Yes 2. No	
5	Did an Environmental Health officer ever inspect your premises?	1. Yes 2. No	
III. Food hygiene and safety information			
1	Do you have food hygiene and safety information?	1. Yes 2. No	
2	If yes for # 1 what is the source	1. Mass media 2. Training 3. Inspectors 4. Friends 5. Parents	
3	Did you receive feedback from your customers about your hygiene?	1. Yes 2. No	
4	Have you ever received any training in Food Safety?	1. Yes 2. No	
5	If yes for # 5, how long ago?	1. Within 2 years 2. 2 years ago	
IV. Knowledge on food hygiene and safety			
1	Wiping Cloths can spread microorganisms	1. True 2. False 3. Don't know	
2	Refrigeration eliminates harmful germs in food.	1. True 2. False 3. Don't know	
3.	The same cutting board can be used for raw foods and cooked foods provided it looks clean	1. True 2. False 3. Don't know	
4.	Raw foods need to be stored separately from cooked foods	1. True 2. False 3. Don't know	
5	Cooked foods do not need to be thoroughly reheated	1. True 2. False 3. Don't know	
6	Habit of fingering nose is dangerous	1. True 2. False 3. Don't know	
7	Skin infections can contaminate food	1. True 2. False 3. Don't know	

8	Lick fingers can contaminate food	1. True 2. False 3. Don't know	
9	Utensils should be washed with hot water	1. True 2. False 3. Don't know	
10	Mouth, nose and hair should be covered	1. True 2. False 3. Don't know	
11	Food borne diseases causing microorganisms are found every where	1. True 2. False 3. Don't know	
12	Microorganisms are present on human skin	1. True 2. False 3. Don't know	
13	Human beings emit microorganisms during sneezing and talking	1. True 2. False 3. Don't know	
14	Food may be contaminated during sneezing, taking and touching by our hands	1. True 2. False 3. Don't know	
15	Microorganisms cannot survive in clod and cooked foods	1. True 2. False 3. Don't know	
16	Washing fruits and vegetables before eating/preparing is not important	1. True 2. False 3. Don't know	
17	Status of the source of raw material affects the quality of the food	1. True 2. False 3. Don't know	
18	Leftover foods can cause diseases	1. True 2. False 3. Don't know	

V. High level knowledge

1	Do you know about the 5 Keys to Safer Food?	1. Yes 2. No	
2	List the name of the 5 Keys?	1. _____ 2. _____ 3. _____ 4. _____ 5. _____	
3	How do you store large amounts of food in refrigerator?	1. Place them with their original amount/size. 2. Put in a clean, deep container before and refrigerate right away	

		3. Divide into smaller shallow containers approximately 5 cm deep. (+) 4. Don't know how they stored.	
4	How many times you Clean and sanitize cutting boards, meat slicers and utensils?	1. Once a day 2. every 2 hours if doing the same task(+) 3. every 4 hours if doing the same task 4. every 6 hours if doing the same task	
5	How should dishes be washed to prevent food poisoning?	1. Hand wash them and rinse right after the meal and then let them air-dry.(+) 2. Hand wash and rinse them right after the meal and then dry them with a dish towel	
6	Where is the best place to store raw meat in the refrigerator?	1. On the top shelf(+) 2. Where there is space 3. Below foods that are ready to eat	
7	How long can you store meat and chicken in the refrigerator to eat later?	1. 1-2 days (+) 2. 3-4 days 3. 5-7 days 4. More than a week	
VI. Practice of food hygiene and safety principles check list		Options	
		Yes	No
1	Tap or a water container to carry water		
2	A basin or sink or bucket for washing hands		
3	Soap for hand washing		
4	A bowl or bucket for washing dishes and utensils		
5	Soap powder or liquid to wash dishes		
6	Clean Cloths to cover all food		
7	Separate knife and cutting board for raw and cooked foods		
8	Separate store for raw and		

	cooked foods		
9	Correct dish washing procedures (ask them to show you how they wash)		
10	Do not Wipe the washed utensils by clothe		
11	Cleaned utensils and foods are stored 60 cm above the ground		
12	Garbage is stored in suitable receptacles.		
13	No cracked and scratched utensils		
14	Hair is covered during service		
15	No decorated hand nails and jewelries		
16	Short nails, clean hand		
17	No cuts or wound on the hand		
18	Used forceps or ladles to pick up ready-to-eat foods.		
19	Washed hands after touching money, skin and hair		
20	Clean surfaces		
21	Have habit of fingering nose and ear		
22	Do you Lick fingers to pick paper/ money		
23	Do you Wipe hands on a dirty cloth		
24	Do you touch the inside and rim of cups or glasses.		
25	Chewing gum at work		
26	Store food in refrigerator		
27	Availability of latrine		
28	When should you wash your hands	<ol style="list-style-type: none"> 1. After visiting toilet 2. Before and after preparation of foods 3. After touching the skin, nose 4. After I receive money 5. Before washing of utensils 	

29	If you have a cut or sore on your hand, what should you do before you prepare food for your Family?	<ol style="list-style-type: none"> 1. Nothing, if it is not infected 2. Put a bandage on the cut or sore 3. Wash hands 4. Put a bandage on the sore and wear a glove. (+)
30	What is the best way to wash your hands? (ask them to show you how they wash)	<ol style="list-style-type: none"> 1. Apply sanitizer, run water, rub hands together for 20 seconds, rinse hands, dry hands, rub on an antiseptic hand lotion 2. Apply soap, rub hands together for 20 seconds, rinse hands under water, dry hands, apply sanitizer 3. Run water, moisten hands, apply soap, rub hands together for 20 seconds, rinse hands, dry hands(+) 4. Run water, moisten hands, apply sanitizer, rub hands together for 20 seconds, rise hands, dry hands, rub on antiseptic hand lotion
31	Your electricity went off in your freezer and the meat, chicken, and fish thawed and felt warm. What should you do?	<ol style="list-style-type: none"> 1. Throw them away(+) 2. Cook them right away 3. See how they smell or look before deciding what to do 4. Immediately re-freeze until solidly frozen, then cook it
32	If there is latrine	<ol style="list-style-type: none"> 1. Clean (if the slab is neat, smooth and free from feaces, flies and free from spill. If no bad odor and there is good lighting) 2. Dirty (the opposite of clean)
33	Location of latrine	<ol style="list-style-type: none"> 1. Attached with the kitchen. 2. Attached with the serving room. 3. Attached with the store. 4. Detached from the kitchen, serving rooms and the store by 5 meter distance.

That is the end of our questionnaire. Thank you very much for taking time to answer these questions. We appreciate your help

11.4 Annex IV: Amharic version of Questionnaire

በከምቦልቻ ከተማ ውስጥ በሚገኙ የመንገድ ዳር ምግብ አገልግሎት በሚሰጡ ድርጅቶች ውስጥ የሚሰሩ ሰራተኞች በምግብ ንጽህናና ደህንነት ላይ ያላቸውን እውቀትና አመለካከት ብሎም የምግብ-ንጽህናና-ደህንነት-ለመጠበቅ-እየተገባራቸው-ያሉትን-ተግባራት-ለማጥናት-የተዘጋጀ መጠይቅ

ይህ መጠይቅ በከምቦልቻከተማ ውስጥ በሚገኙ የመንገድ ዳር ምግብ አገልግሎት በሚሰጡ ድርጅቶች ውስጥ የሚሰሩ ሰራተኞች በምግብ ንጽህናና ደህንነት ላይ ያላቸውን እውቀትና አመለካከት ብሎም የምግብ ንጽህናና ደህንነት ለመጠበቅ እየተገባራቸው ያሉትን ተግባራት ለማጥናት የተዘጋጀ ነው።

ቃለመጠይቁከመደረጉበፊትየተሳታፊዎችንፍቃደኝነትመጠየቂያቅጽ

ሰላምታ፣ እንደምን አሉ? እኔ አቶ/ወ/ሮ/ወ/ሪት _____ እባላለሁ ። እዚህ የመጣሁት በምግብ ንጽህናና ደህንነት ትላይ ያለዎትን እውቀትና አመለካከት ብሎም የምግብን ንጽህናና ደህንነት ለመጠበቅ እየተገባራቸው ያሉትን ተግባራት ለማጥናት ነው። ይህንን ጥናት የማካሄደውም የጎንደር ዩንቨርሲቲ የህብረተሰብ ጤና አጠባበቅ ኢንስቲትዩት ቡድን አባል ሆኖ ነው። እዚህ በመቀጠል በምግብ ንጽህናና ደህንነት ላይ ያለዎትን እውቀትና አመለካከት ብሎም የምግብ ንጽህናና ደህንነት ለመጠበቅ እየተገባራቸው ያሉትን ተግባራትና ሌሎች ተያያዥ የሆኑ ነገሮችን በተመለከተ የተወሰኑ ጥያቄዎችን ልጠይቅዎት እወዳለሁ። ከእርስዎ የምናገኛቸውን ማንኛቸውንም መልስ በሚስጥር እንጠብቃለን። እዚህ ጥናት ጋር በተያያዘ በማንኛውም ቦታና ጊዜ ስምዎ እንደማይጻፍና እንደማይጠቀስ ልገልጽልዎ እወዳለሁ። በጥናቱ የማሳትፍዎት የእርስዎን ሙሉ ፈቃደኝነት ሳገኝ ብቻ ነው። በመጠይቁ ሂደት ለመመለስ የማይፈልጓቸውን ጥያቄዎች ያለመመለስ መብትዎ የተጠበቀ ነው። ይሁን እንጂ የእርስዎ ትብብርና ትክክለኛ ምላሽ ጥናቱን ምርምሩ እንዲሳካ ያደርገዋል። ስለዚህ ለማቀርብልዎት ጥያቄዎች በትእግስት መልስ እንድሰጡኝ እጠይቃለሁ። በጥናቱለመሳተፍ ፍቃደኛ ነዎት? 1. አዎ 2. አይደለሁም

1. ፈቃደኛ ከሆኑ መጠይቁን ጀምር
2. ፈቃደኛ ካልሆኑ ወደ ሌላ ሰራተኛ ይሂዱ

የመረጃ ስብሰባው ስም _____ ፊርማ _____

መጠይቁ የተሞላበት ቀን _____ የተጀመረበት ሰዓት _____

ያለቀበት ሰዓት _____

መጠይቁ	በትክክልና	ሙሉ	በሙሉ	መሞላቱን	ያረጋገጠው	ተቆጣጣሪ
_____	_____	_____	_____	_____	_____	_____
			ፊርማ			

የመጠይቁ ሁኔታ፡ 1. በትክክልና ሙሉ በሙሉ የተሞላ 2. በከፊል የተሞላ

ተ.ቁ	ጥያቄ	አማራጭ መልሶች	
ክፍል አንድ፡ማህበራዊ ስነህዝባዊ ገጽታዎችን በተመለከተ			
1	የተቋሙ/ የድርጅቱ አይነት	1. ተንቀሳቃሰ 2. ቃሚ	
2.	የድርጅቱ ባለቤት ነዎት	1. አዎ 2. አይደለሁም	1 ከሆነ ወደ ክፍል 4 ዝለል
3	አለቃዎ ወይም የድርጅቱ ባለቤት ይከታተልዎታል/ይቆጣጠርዎታል?	1. ይቆጣጠረኛል 2. አይቆጣጠረኝም	
4	ምን ያክል ሰራተኞች አሉዎት	1. ብቻዬን ነው የምሰራው 2. ሁለት 3. ሶስት 4. አራት እና ከዚያ በላይ	
5	ጾታ	1. ወንድ 2. ሴት	
6	ዕድሜ	_____ አመት	
7	ሀይማኖት	1. ኦርቶዶክስ 2. ካቶሊክ 3. ፕሮቴስታንት 4. ሙስሊም	
8	የትምህርት ሁኔታ	1. ያልተማረ/ች 2. የመጀመሪያ ደረጃ ትምህርት/1-8/ 3. ሁለተኛ ደረጃ ትምህርት /ከ 9 — 12/ 4. የከፍተኛ ትምህርት (12+)	
9	የጋብቻ ሁኔታ	1. ያገባ/ች 2. ያላገባ/ች 3. የፈታ/ች	
10	ከማን ጋር ነው የምትኖረው/ ሪው	1. ብቻዬን 2. ከሚስቴ/ ከባሌ ጋር 3. ከልጄ / ከልጆቼ ጋር 4. ከህጻናት ጋር 5. ከወላጅ ቤተሰቦቼ ጋር	

11	አብረኸው/ሽውየምትኖሪው ሰውየትምህርታ (ከቤተሰብ ጋር ከሆነ ከቤተሰቡ ከፍተኛ የትምህር ደረጃያለውን ይጻፉ)	1. ያልተማረ/ች 2. የመጀመሪያ ደረጃትምህርት/1-8/ 3. ሁለተኛ ደረጃትምህርት /ከ 9 — 12/ 4. የከፍተኛ ትምህርት (12+)	
12	የቤተሰብብዛት	_____	
13	ወርሃዊገቢ	_____ ብር	
14	ይህንስራለምንያክልጊዜሰራህ/ሽ? (ከሌላቦታየሰሩትንምይጨምራን)	1. < 1 አመት 2. 1 አመት 3. 2 አመት 4. 3 አመት 5. > 4 አመት	

ክፍል ሁለት:የአካባቢ ንጽህና አጠባበቅ ባለሙያዎችን ቁጥጥር በተመለከተ

1	የፍቃድሁኔታ (የፍቃድ ወረቀቱን እዩ)	1. ፍቃድያለው 2. ፍቃድየሌለው	
2.	የአካባቢ ንጽህና አጠባበቅ ባለሙያዎች እነማን እንደሆኑ ያጠቃሉ	1. አዎ 2. አላውቅም	2ከሆነ ወደ ክፍል 3 ዝለል
3.	የነዚህ የአካባቢ ንጽህና አጠባበቅ ባለሙያዎች መኖራቸው ለስራዎ ጥቅም አላቸው ብለው ያስባሉ	1. አዎ 2. አላስብም	
4.	የአካባቢ ንጽህና አጠባበቅ ባለሙያዎች በየጊዜው የምትሰሩትን ስራ እየመጡ ያያሉ/ ይቆጣጠራሉ	1. አዎ 2. አይቆጣጠሩም	

ክፍልሶስት:ስለምግብንጽህናናደህንነትያላቸውንመረጃበተመለከተ

1	የምግብንጽህናናደህንነትንበተመለከተ መረጃአለዎት?	1. አለኝ 2. የለኝም	2 ከሆነወደ 2ዝለል
2	መረጃካለዎትየመረጃምንጭዎምን ድንኳን	1. የቡዙሃንመገናኛድር ጅቶች 2. ስልጠና	

		3. የጤናተቆጣጣሪዎች 4. ህጻኖች 5. ቤተሰቦች	
3	ስለንጽህናዎክደምበኛዎ/ ከሚያስተናግዱትሰውአስተያየትይ ሰጥዎታል?	1. ይሰጠኛል 2. አይሰጠኝም	
4	ስለምግብንጽህናናደህንነትካሁንበፊ ትስልጠናወስደውያውቃሉ?	1. ወስጀአውቃለሁ 2. ወስጀአላውቅም	2 ከሆነወደ 6 ዝለል
5	ወስደውካወቁከወሰዱምንያክልጊዜ ሁኖታል?	1. ሁለትአመትወይምበዚህ ሁለትአመትውስጥ 2. ከሁለትአትበፊት	
በምግብንጽህናናደህንነትላይያለዎትንእውቀትበተመለከተ			
1	የመወልወያጨርቅየበሽታአምጭተ ዋህሲያንንካንዱእቃወደሌላውእቃያ ሰራጫል/ ያስተላልፋል	1. እውነት 2. ሐሰት 3. አላውቅም	
2	ምግብንማቀዝቀዝየበሽታአምጭተ ዋህሲያንንከምግቡያስወግዳል .	1. እውነት 2. ሐሰት 3. አላውቅም	
3	ለበሰሉናላልበሰሉምግቦችአንድመክ ተፈያጣውላወይምቢለዋመጠቀምይ ቻላል	1. እውነት 2. ሐሰት 3. አላውቅም	
4	የበሰሉምግቦችካልበሰሉምግቦችተለ ይተውመቀመጥአለባቸው፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
5	የበሰሉምግቦችእንደገናማሞቅአያስ ፈልጋቸውም፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
6	አፍንጫንበጣት/ በመዳፍመንካትምግብንይበክላል፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
7	የቆዳበሽታምግብንይበክላል፡፡	1. እውነት	

		2. ሐሰት 3. አላውቅም	
8	ወረቀትሲያነሱወይምብርሲቆጥሩጣትንምራቅእያስነኩማንሳትወይምመቁጠርምግብንይበክላል	1. እውነት 2. ሐሰት 3. አላውቅም	
9	የምግብእቃዎችበሞቀውሃመታጠብአለባቸው፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
10	በምግብዝግጅትጊዜሰራተኞችአፋቸውን፣አፍንጫቸውንናጸጉራቸውንመሸፈንአለባቸው፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
11	የምግብ ወለድ በሽታን የሚያመጡ ረቂቅ ተዋህሲያን በየትኛውም ቦታ ይገኛሉ፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
12	በሽታ የሚያመጡ ረቂቅ ተዋህሲያን በሰው ቆዳ ላይ ይገኛሉ፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
13	ሰውበሚያወራበት፣በሚስቅበትናበሚያነጥስበትጊዜየበሽታአምጭተዋህሲያንንወደአየርይለቃል፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
14	ምግብ በምናወራበት፣ በምንስቅበትና በምናነጥስበት ጊዜ እንድሁም በእጃችን ስንነካው በበሽታ አምጭ ተዋህሲያን ይበክላል፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
15	በሽታአምጭተዋህሲያንበቀዘቀዘናበተቀቀለምግብውስጥመኖርአይችሉም፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
16	አትክልትናፍራፍሬዎችንከማዘጋጀታችንወይምከመብላታችንበፊትማጠብአስፈላጊአይደለም፡፡	1. እውነት 2. ሐሰት 1. አላውቅም	

17	የምግብጥሬእቃዎችንየምንገዛበትወይምየምናገኝበትየምንጨንጽህናከምንሰራውምግብንጽህናጥራትጋርይያያዛል፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
18	ትራፊምግቦችበሽታንያመጣሉ፡፡	1. እውነት 2. ሐሰት 3. አላውቅም	
ክፍል አራት፡ ጥልቅ ወይም ከፍተኛ እውቀትን መለኪያ			
1	ምግብንየበለጠንጽህለማድረግየምንጠቀምባቸውንአምስቱንቁልፍተግባራትያውቋቸዋል?	1. አውቃቸዋለሁ 2. አላውቃቸውም	2 ከሆነወደ3ዝለል
2	አምስቱንቁልፍተግባራትካዎቋቸውስማቸውንዘርዝሩ?	1. _____ 2. _____ 3. _____ 4. _____ 5. _____	
3	ውፍረትያላቸውንወይምትልቅምግቦችንከማቀዝቀዣውስጥእንደትነውየሚያስቀምጡት?	1. ምንምሳንነካከበቀጥታማስቀመጥ 2. መጀመሪያንጽህናከፍባለእቃካስቀመጥንበኋላማቀዝቀዣውስጥማስገባት 3. ውፍረቱንወይምመጠኑንለመቀነስከቆራረጥንበኋላ (በግምት 5 ሳ.ሜመጠንወዳላቸውቁርጥራጮች) ማቀዝቀዣውስጥማስገባት 4. እንዴትመቀመጥእንዳለበትአላውቅም	
4	መከተሪያውን፣ቢለዋውን፣የሰጋመፍጫውንበምንያክልጊዜልዩነትያጥቡታል?	1. በቀንአንድጊዜ 2. በሁለትሰዓትልዩነት 3. በአራትሰዓትልዩነት 4. በስድስትሰዓትልዩነት	
5	የምግብእቃዎችእንደትመታጠብአለባቸው?	1. መጀመሪያመዎልዎልወይምበእጅማጠብ፤ከዚያበሳሙናበደንብማጠብ፤በውሃውስጥመንከርናበአየርማዳረቅ	

		<p>2. መጀመሪያ መዋዕል ወይም በእጅ ማጠብ፤ ከዚያ በኋላ የውሳኔው ስምንት ከርና በአየር ማዳረቅ</p> <p>3. መጀመሪያ መዋዕል ወይም በእጅ ማጠብ፤ ከዚያ በኋላ ማውሰድና በደንብ ማጠብ፤ በውሳኔው ስምንት ከርና በመዋዕል ወይም ማዳረቅ</p> <p>4. እንደትመታጠብ እንዳለባቸው አላውቅም</p>	
6	ጥሬ ወይም ያልበሰለ ስጋ ማቀዝቀዣው ስጥየት ነው መቀመጥ ያለበት?	<p>1. በላይኛው ማስቀመጫ (በረዶቤት)</p> <p>2. ክፍት ቦታ በተገኘበት ስፍራ</p> <p>3. ሊበሉ ከተዘጋጁ ምግቦች ስር</p> <p>4. የትመቀመጥ እንዳለበት አላውቅም</p>	
7	ስጋ ማቀዝቀዣው ስጥለምን ያክል ጊዜ መቀመጥ አለበት ?	<p>1. 1-2 ቀናት</p> <p>2. 3-4 ቀናት</p> <p>3. 5-7 ቀናት</p> <p>4. ከሳምንት በላይ</p> <p>5. ለምን ያክል ጊዜ መቀመጥ እንዳለበት አላውቅም</p>	
ክፍል አምስት: የምግብ ንጽህናና ደህንነት ለመጠበቅ እየተገበራቸው ያሉትን ተግባራት በተመለከተ			
	የምግብ ንጽህናና ደህንነትን ለማረጋገጥ እየተሰሩ ወይም እየተተገበሩ ያሉ ተግባራት	አማራጭ መልሶች	
		አለ ወይም ይተገበራል	የለም ወይም አይተገበርም
1	የውሃ ሂደት ወይም የውሃ ማጠራቀሚያ አለ		
2	የእጅ መታጠቢያ ገንዳ ወይም ሳፋ አለ		
3	የእጅ መታጠቢያ ሳሙና አለ		
4	የምግብ እቃዎችን ማጠቢያ ገንዳ ወይም ሳፋ አለ (ሁለት ወይም ሶስት መሆኑን ተመልከቱ)		
5	የእቃ ማጠቢያ ፈሳሽ ወይም ዱቄት ሳሙና አለ		

6	የምግብ መሸፈኛ ንጹህ ጨርቅ አለ		
7	ለበሰሉና ላልበሰሉ ምግቦች የተለየ መክተፊ ያናቢ ሊዋሰን ይችላል፡፡		
8	ለበሰሉና ላልበሰሉ ምግቦች ማስቀመጫ የተለየ ቦታ አለ፡፡		
9	ትክክለኛውን የእቃ አስተጣጠብ ሂደት ይከተላል (ሲያጥቡ ማየት ያስፈልጋል)፡፡		
10	የታጠቡ እቃዎችን በማዳረቂያ ጨርቅ አይወለዱም፡፡		
11	የታጠቡ የምግብ እቃዎችና ምግቦች ከወለሉ በኋላ በ60 ሳ.ሜ ከፍታ ላይ ተቀምጠዋል፡፡		
12	በምግብ ዝግጅት ወቅት የሚመነጨው ደረቅ (በከፊል ደረቅ) ቆሻሻ በትክክለኛ ማጠራቀሚያ እቃ ተቀምጧል፡፡		
13	የተሰነጠቁ የተላላጡ ወይም የተሸረረፉ የምግብ እቃዎች የሉም፡፡		
14	ሰራተኞች በሰራ ወቅት ጸጉራቸውን ሸፍነዋል፡፡		
15	ሰራተኞች የጥፍር ቀለም ወይም የእጅ ጌጣጌጥ አይጠቀሙም / የላቸውም፡፡		
16	የሰራተኞች የእጅ ጥፍር በአጭሩ የተቆረጠ ነው፡፡ እንደሁም እጃቸው ንጹህ ነው፡፡		
17	በሰራተኞች እጅ ላይ ቁስል ወይም የተሰነጠቀ ቆዳ የለም፡፡		
18	የተዘጋጁ ምግቦችን ለማንሳት ምግብ ማንሻ ወይም ፎርሴፕስ ይጠቀማሉ፡፡		
19	ንጹህ ወለል ወይም ቦታ		
20	አፍንጫንና ጆሮን የመንካት ልምድ		
21	ወረቀት ሲያነሱ ወይም ብር ሲቆጥሩ ጣትዎን ምራቅ ያስነካሉ		
22	እጅዎትን በልብስዎ ላይ ይጠርጋሉ ወይም ያዳርቃሉ		
23	ብርጭቆዎችን በውስጥ በኩል ይነካሉ		
24	ምግብ እያዘጋጁ ወይም እያቀረቡ ማስቲካ ያኝካሉ		
25	ምግብን በማቀዝዣ ያስቀምጣሉ		

26	ለሰራተኞች መልበሻ ክፍልና ሻወር አላቸው		
27	ሰራተኞች የሚጠቀሙበት ሽንት ቤት አለ		
28	እጅዎትን መቸመቸ ይታጠባሉ	<ol style="list-style-type: none"> 1. ከሽንትቤት መልስ 2. ከምግብዝግጅት በፊትና በኋላ 3. ቆዳን፣ አፍንጫን፣ ጆሮንና ሌሎች የሰውነት ክፍሎችን ከነካሁ በኋላ 4. ብርክነካሁ ወይም ከቆጠርኩ 5. የምግብ እቃዎችን ከማጠባበቅ 6. የተለያዩ ነገሮችን ከነካሁ በኋላ 	
29	እጅዎትን ቢቆረጡ ወይም እጅዎት ላይ ቁስል ቢኖር ብዎትም ግብክማ ዘጋጀት ዎበፊት ምን ያደርጋሉ	<ol style="list-style-type: none"> 1. ምንም አላደርግም 2. በፋሻ አስረዋለሁ 3. አጥብቃለሁ 4. በፋሻ አስፊ ህንት እለብሳለሁ 	
30	ትክክለኛው የእጅ አስተጣጠብ ሂደት እንዴት ነው (በተግባር እንደ ያሳዩህጠይቅ)	<ol style="list-style-type: none"> 1. ማጽጃ ወይም ሳሙና መጠቀም፣ ውሃ ማፍሰስ፣ ለ20 ሰከንድ እጅን ማሸት፣ እጅን በውሃ መንከር፣ እጅን ማዳረቅ፣ ጀርምን መግደል የሚችሉ ቅባቶችን ወይም ድስንፊክታንት መጠቀም 2. ሳሙና መጠቀም፣ ለ20 ሰከንድ እጅን ማሸት፣ እጅን በውሃ መንከር፣ እጅን ማዳረቅ፣ ጀርምን መግደል የሚችሉ ቅባቶችን ወይም ድስንፊክታንት መጠቀም 3. ውሃ ማፍሰስ፣ እጅን ማራስ ማራጠብ፣ ማጽጃ ወይም ሳሙና ነመጠቀም፣ ለ20 ሰከንድ እጅን ማሸት፣ እጅን ማዳረቅ፣ ጀርምን መግደል የሚችሉ ቅባቶችን ወይም ድስንፊክታንት መጠቀም 	
31	ምግብ በማቀዝቀዣ ውስጥ አስቀምጠው ምግቡ መሞቅ ሲጀምር መብራት ቢጠፋ ምን ያደርጋሉ	<ol style="list-style-type: none"> 1. ምግቡን እጥለዋለሁ 2. ምግቡን ቅቅሎ መጠቀም 3. ከመወሰኔ በፊት ምን ያክል እንደሚሸት ወይም ምን እንደሚመስል እሞክራለሁ ወይም 	

		<p>አያለሁ</p> <p>4. በፍጥነት ወይም ወድያዊነት በጣም አቀዝቅገሄ እቀቅለዋለሁ</p>
32	ሽንት ቤት ካለ	<p>1. ንጹህ ነው (ወለሉ ከማንኛውም ቆሻሻ የጸዳ ፣ለስላሳ የሆነ፣ ሰገራ የሌለው፣ ዝንብ የሌለው፣ሽንት ወይም ሌላ ፈሳሽ ነገር የሌለው፣ መጥፎ ሽታ የሌለውና በቂ ብርሃን ያለው)</p> <p>2. ንጹህ አይደለም (ከላይ የተዘረዘሩትን የማያሟላ ከሆነ)</p>
33	የሽንት ቤቱ አቀማመጥ	<p>1. ከኩሽና ቤቱ ጋርየተያያዘ</p> <p>2. ተጠቃሚው አገልግሎት ከሚያገኝበት ክፍል ጋር የተያዘ</p> <p>3. ምግብና የምግብ እቃዎች ከሚቀመጡበት ክፍል ጋር የተያያዘከላይ ከተጠቀሱት ክፍሎች ቢያንስበ 5 ሜትር ርቀት ላይ ተለይቶ የተሰራ</p>

ጥያቄዎቹን ጨርሻለሁ፡፡ ውድ ጊዜዎትን ሰጥተው ለጥያቄዎቹ መልስ ስለሰጡኝ ከልብ አመሰግናለሁ፡፡

11.5 Annex V. Declaration

I, the undersigned, MPH student declare that this thesis is my original work in partial fulfilment for the requirement for the degree of Master of public health.

Name: Genet Mesele Mengesha (DVM)

Signature_____

Place of submission: Institute of public health, college of medicine and health sciences, university of Gondar.

Date of submission_____

This thesis work has been submitted for examination with my/our approval as university advisor(s)

Advisors

Name	Signature	Date
1. Sr. Azeb Atinafu (BSc, MSc) _____	_____	
2. Dr. Sintayehu Mulugeta (DVM, MSc)	_____	_____

